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COAL MINING

March, 1959

Volume 36, No. 3

Lima 2400 and Lima 1201 ... 2 of the 3 Limas at Pulford Coal Co., Irvona.

AA-9031

Highway

HIGHWAY EQUIPMENT COMPANY
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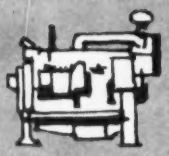
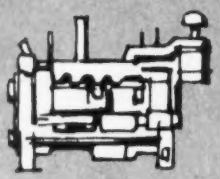
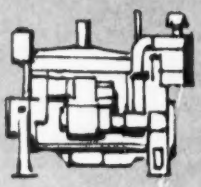
How Beckwith Machinery Company

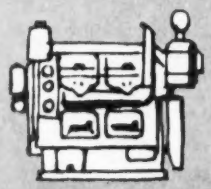
CATERPILLAR DEALER ENGINE SPECIALISTS

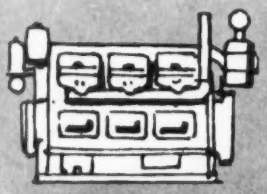
Can Save You Money









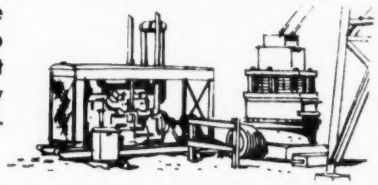


WE OFFER A WIDE RANGE OF ECONOMICAL POWER . . .

The Caterpillar diesel line is the most complete in the industry. Engines range in horsepower up to 700. Our Electric Sets are rated up to 375 KW. In addition, Beckwith offers you a Caterpillar "certification" of power document which gives written proof of dynamometer tests on your engine or electric set. You know exactly what power your particular engine produces.

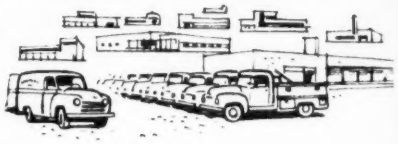
BECKWITH SPECIALISTS CAN ADVISE ON PROPER APPLICATION . . .

Possibly several different engine models or sizes could be used to drive a particular piece of equipment. However, there is one "best" engine which will match power to load, give best production, keep maintenance costs lowest. Our experience with correct attachments and special arrangements can mean money in your pocket. We will see that you have adequate power to achieve full use of your equipment without excessive fuel consumption, unnecessary maintenance of powered equipment or premature failure of drive components.



PARTS AND SERVICE FACILITIES BACK UP YOUR INSTALLATION . . .

Beckwith maintains six strategic locations, offering superior parts and service facilities in Western Pennsylvania and the Northern area of West Virginia. In addition we can call upon 16 factory parts depots for the occasional items which may temporarily not be in our vast parts stocks. Our servicemen are available around the clock and are equipped with speedy trucks and specialized tools to keep your equipment running with a minimum of down-time.



If you have a power problem, call your Beckwith CDES (Caterpillar Dealer Engine Specialist) and find the way to new profits through the proper application of Caterpillar diesel power. We are at your service . . . call us today.

*Both CATERPILLAR and CAT are registered trade marks of The Caterpillar Tractor Co.

engine power
BY CATERPILLAR

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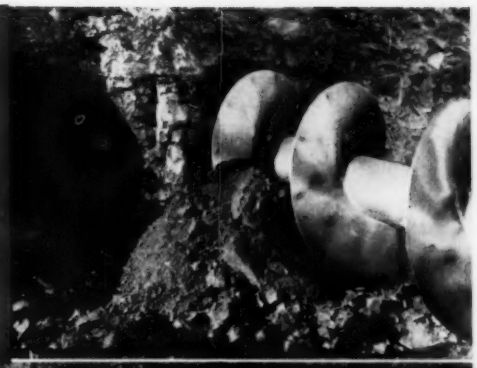
800 TONS PER SHIFT

WITH McCARTHY AUGERS



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ONLY TWO OPERATORS REQUIRED ON MACHINE
DRILLS ANY SEAM REGARDLESS OF HARDNESS
ADAPTS FOR 30", 36" and 42" AUGERS

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Equipment cost is important. Get the facts on Salem's 12 McCarthy Models today. Initial investment is less... pit to pit moves are simple and fast... setup is quick. Add it up... augered coal costs less per ton with McCarthy.

Manufacturers of Drilling Equipment Since 1901

THE SALEM TOOL CO.

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SALEM

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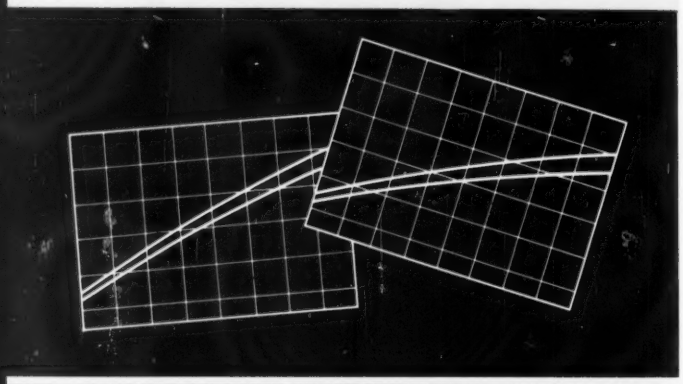
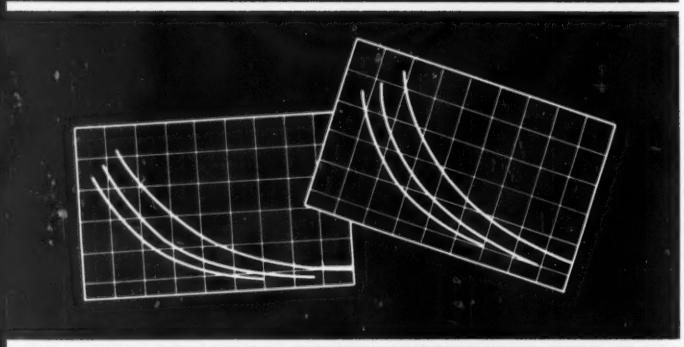
engine
power
BY CATERPILLAR

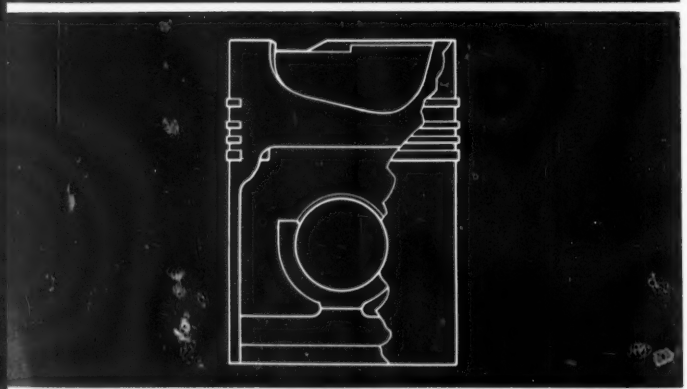
NEW D342



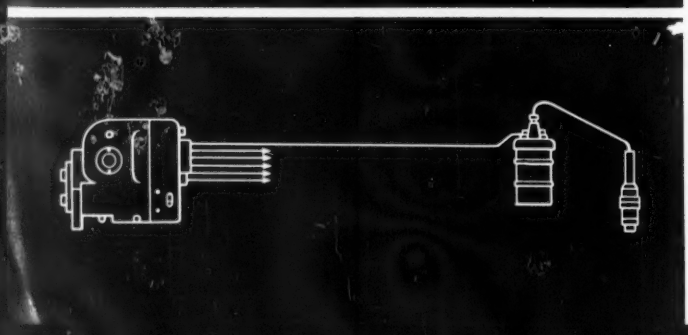
With two compression ratios available, the Caterpillar D342 Spark Ignition Engine gives you the opportunity of getting the utmost in performance. The 10:1 ratio is for use with dry natural gas (as supplied through pipelines) which has a very high percentage of methane. For "wet" natural gas, butane or propane, the 7.5:1 compression ratio is used. Shown in the charts, at left, are the wide-open throttle continuous horsepower ratings available with Caterpillar Spark-Ignition Engines. The basic engine, which is designed for diesel operation, has a compression ratio of 15.7:1. Continuous Horsepower at 1200 RPM—7.5:1 compression ratio 200 HP; 10:1 Compression ratio 225 HP.



Fuel consumption curves on partial loadings clearly show the outstanding efficiency of this D342 engine to reduce your power expenses. Based upon present gaseous fuel costs, this Spark-Ignited Engine can reduce your fuel bill up to 50% over diesel operation. Fuel Consumption 10:1 compression ratio at 225 HP at 1200 RPM—7.9 cu. ft./BHP-hr. of 1000 BTU/cu. ft. gas. Write for full power and fuel consumption curves.

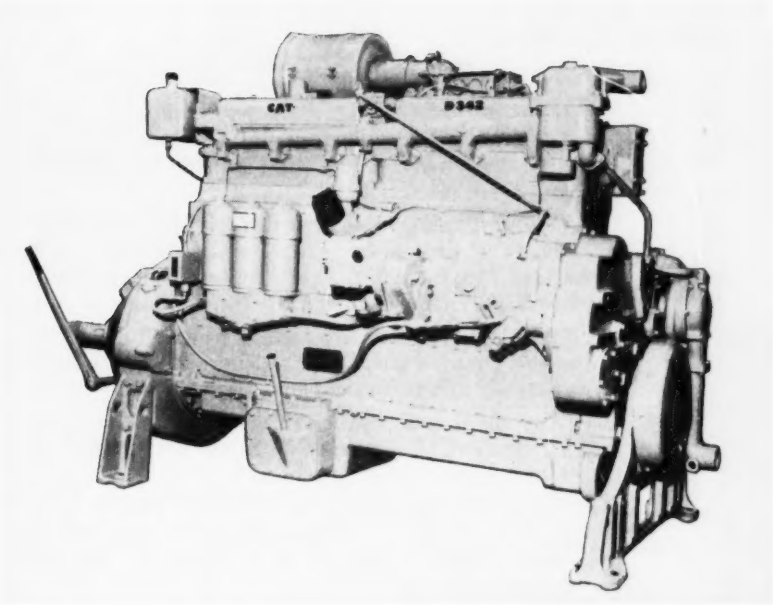


The heavy duty piston used in the D342 is designed with an efficient combustion chamber. A cast-in cast iron ring band gives longer life to the lightweight, cool-operating aluminum piston. It is simple to change the compression ratio. Only the piston needs to be exchanged to get the 10:1 or 7.5:1 compression ratio. You can get the utmost in efficient operation for your location by selecting the proper compression ratio, as influenced by the type of fuel available.



Maximum economy is assured by use of the low tension ignition system to get a strong spark at each plug. The low tension current from the special magneto generator is converted into high tension in the individual spark coils located adjacent to each spark plug. This ignition current is of a quality not possible to obtain with the common high tension system, which is subject to high line losses.

Spark Ignition Engine
from Beckwith
Burns a wide range of low cost gaseous fuels



To meet demands for a smaller spark-ignition engine, Caterpillar and Beckwith Machinery Company offer the new Cat D342 Spark Ignition Engine which develops efficient power at surprisingly low fuel costs.

Utilizing most of the major components of the diesel engine used in the Caterpillar D8 Diesel Tractor, this engine is low in first cost...and, like other Caterpillar products, has long life built-in.

If your fuel requirements or working conditions change, the D342 Spark-Ignition Engine can easily be converted to full Diesel operation by changing pistons and changing to a diesel fuel system in place of the ignition and carburetor equipment.

There are many applications where this economical power can be used effectively. These durable Spark-Ignited Engines offer great compactness and their new features provide high output with excellent performance in a wide range of installations. The basic requirement is a source of natural, petroleum or sewage gas. Costs can be reduced in many cases by using this engine to power drill rigs, coal tipples, pumping units, rock crushers, refrigeration plants, air compressors, saw mills, air-conditioning, irrigation systems, etc. It can also be used at low cost with electric generators for electrical power on many other applications.

Our Beckwith Caterpillar Dealer Engine Specialists will gladly help analyze your needs and recommend the Diesel or Spark-Ignited Engine that will do your job best. Call us for complete details . . . no obligation, of course.

Caterpillar Spark-Ignition Engines. Continuous Power.
•D342-225 HP at 1200 RPM •D397-450 HP at 1200 RPM
•D375-300 HP at 1200 RPM (10:1 compression Ratio)

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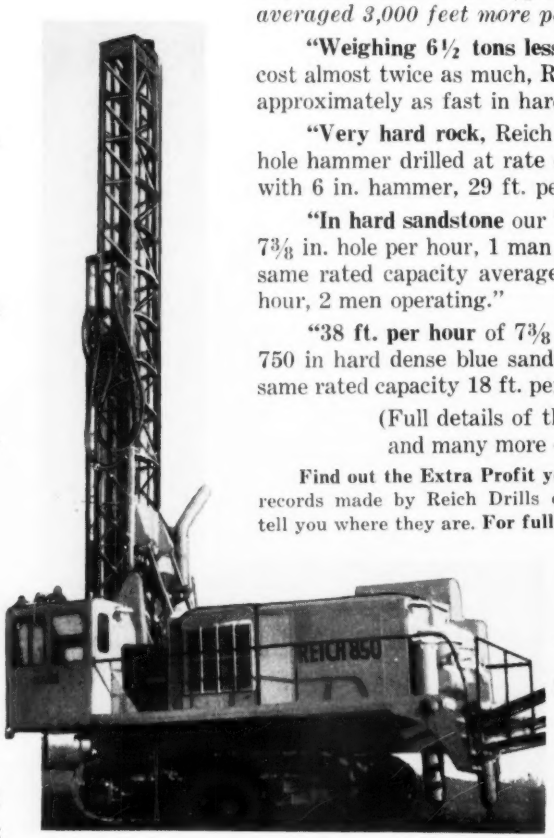
Peabody Coal Company
Raleigh Eagle Coal Company
Red Parrot Coal Company
Saxton Coal Corp.
Tasa Coal Company
U. S. Gypsum Company
U. S. Steel Corporation
Utah Construction Co.
Vecellio & Grogan
Warrior Constructors
Western Contracting Corp.

Also Foreign —
National Coal Board, Great Britain (43 drill rigs)
Atlas Consolidated Mining & Development Corp., Philippine Islands
etc., etc.

Above is a partial list of recent REICH ORDERS and DELIVERIES



"80% more hole drilled by Reich 650 in shale and medium sandstone, than by another hydraulic powered rotary of same rated capacity."

"3 other truck-mounted rotaries drilled a total of 221 ft. of 5⅝ inch hole per hour — one crawler-mounted Reich 750 drilled 236 ft. of 6¼ inch hole per hour, and also *averaged 3,000 feet more per bit."* *

"Weighing 6½ tons less than a crawler rotary that cost almost twice as much, Reich 650 drilled 7⅜ in. holes approximately as fast in hard tough sandstone."

"Very hard rock, Reich 650 with 6⅝ in. down-the-hole hammer drilled at rate of 54 ft. per hour; other rig with 6 in. hammer, 29 ft. per hour."

"In hard sandstone our 750 Reich averaged 57 ft. of 7⅜ in. hole per hour, 1 man operating. Our other drill of same rated capacity averaged 41 ft. of 6¼ in. hole per hour, 2 men operating."

"38 ft. per hour of 7⅜ in. hole drilled by our Reich 750 in hard dense blue sandstone — competitive drill of same rated capacity 18 ft. per hour, both truck-mounted."

(Full details of the above cases — and many more — sent on request)

Find out the Extra Profit you'll make with a Reich. Get the records made by Reich Drills of owners nearest you — we'll tell you where they are. **For full details Write, Wire or Phone —**

FRANK SWABB EQUIPMENT CO.
Hazleton National Bank Bldg.
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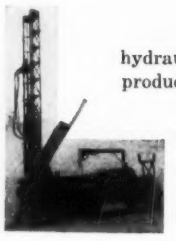
REICH

The REICH'S greater speed is BUILT IN:



*Exactly Right Drilling Speed** in every material — the only hydraulic rotary with *infinitely variable drilling speed.* Much bigger production with far lower bit cost.

Easiest Operation with minimum levers — all controls actuated by hydraulic power. *A real one-man rig.*

← Hydraulic Loader — Barrel Loader →

Faster Stem Loading of the Reich saves time on every hole. Drill stem is added in *seconds* (Compare stem loading).

COAL MINING

Vol. XXXVI March, 1959 No. 3

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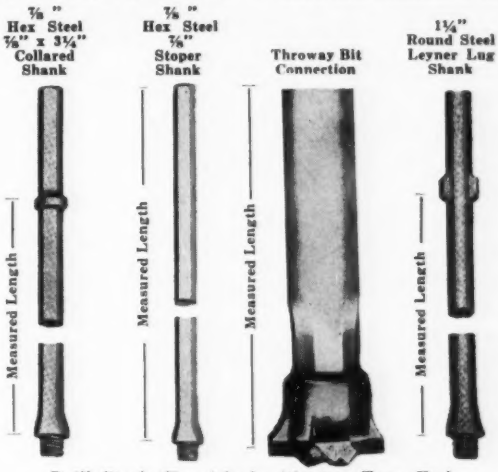
TOOLS from MARS

Pittsburgh Call Zenith 0861 • Mars Call National 5-4688



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Reconditional Service

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Modern Mining Publishing Company

4575 Country Club Drive

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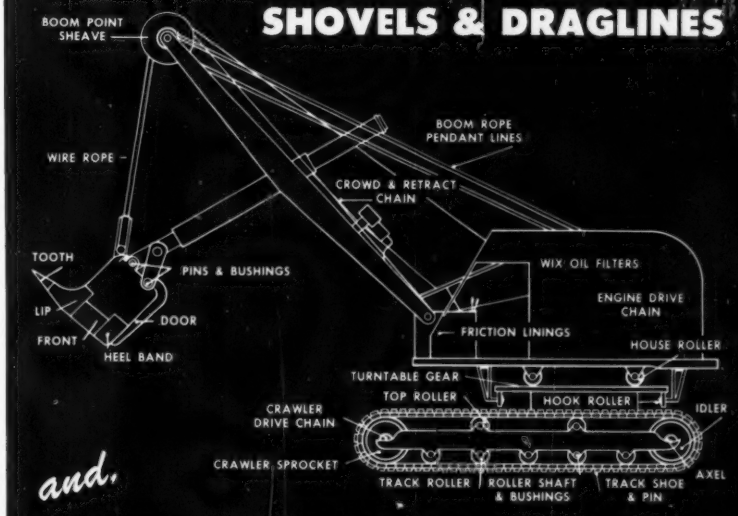
QUALITY REPLACEMENT PARTS FOR SHOVELS & DRAGLINES



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In a most modern and well equipped rebuilding shop

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TRACK SHOES • TRACK IDLERS • TRACK SPROCKETS • BUSHINGS
HOOK ROLLERS • HOUSE ROLLERS • TRACK ROLLERS • SHAFTS • DIPPERS

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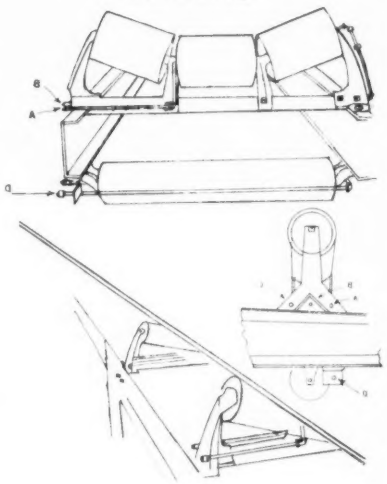
Pipe Lubrication Lines Cut Maintenance Costs and Enhance Safety

● Our mile long conveyor belt operates in three sections that are electrically synchronized. The weather protection was added after the original construction which left only a 1-ft. space net to the wall to reach the multitude of grease fittings. The heavy loads and the dust requires strict attention to lubrication schedules.

The practice was to perform the grease job on the rearward side during down times. This meant overhead expenses not planned for in the layout of the conveyor.

Consequently a study was made to determine the cost of adding cross-piping to each set of rollers so that all the lubrication could be performed at one time.

Piped Grease Connections For Rear Bearings



¼-In. black iron pipe and fittings were used and since they were all the same length, the bulk of the work was done in the shop with power threaders and vises at hand. As an extra precaution to insure clean lines for the essential grease the fittings were all pickled in caustic soda at boiling temperature.

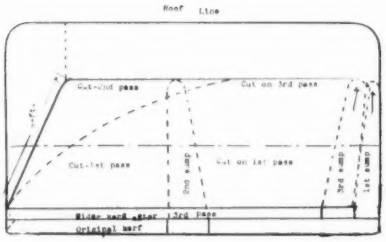
The Pipe extremities were fitted with galvanized Zerc fittings to over come the tendency to rust badly in the long, wet winters of this locale.

Gone is the one time hazard of attempting to lubricate the rearward side during operations periods, or the expensive overtime when the danger was deemed too severe to handle the work during production hours.

An Improved Three-Pass Coal Cutting Method

● The Pee-wee seam is quite hard and the hard slate banding, plus a few nigger-heads sulphur balls, makes for heavy power consumption on our cutting machines and reduced footage as well. TVA power is most economical as to our billing but costs had to be cut to keep out front with the competition.

Luckily, the sales engineers manage to find us out and we've adopted the carbide tipped bits for our cutters. The diagram indicates a typical cut pattern which has just about added a 50 percent increase to our tonnage.



We proceed along these lines: Concluding a sumping cut of approximately 9-ft. parallel to the right hand rib we withdrew the cutter bar some four feet.

Next the first pass is made all the way across the face, to be followed by sumping the cutterbar some 9-ft. at the center of the coal face; then the second pass is made as the cut proceeds for 4-ft. remaining in the left rear.

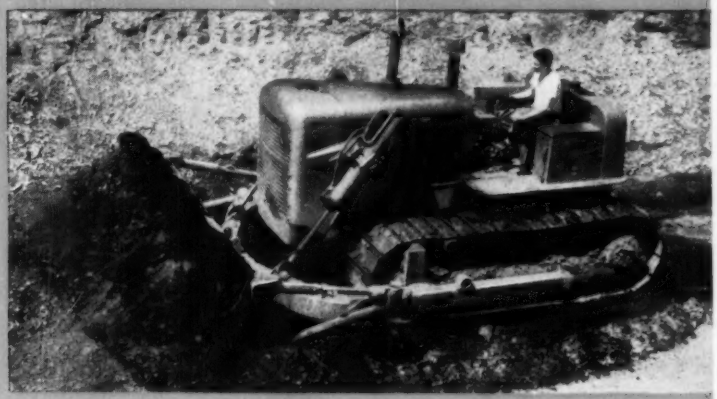
We proceed then to sump in the 9-ft. at the right hand rib. The heel of the cutterbar is raised 10-in.

For the final — third pass — we cut the 4-ft. depth left at the right rear, and continue all the way across the left rear to widen this kerf and to clear out the cuttings for a successful shot.

The new metal has lowered bit costs from a high of 5.4c per ton to 3.3c per ton.

Allis-Chalmers HD-21 . . . P&N Coal Co., Punxsutawney.

There's an ALLIS-CHALMERS tractor for every mine job!



Allis-Chalmers HD-16 . . .
Freebrook Corporation, Kittanning.

Allis-Chalmers HD-11G . . . William Fiore, Russelton.

Allis-Chalmers HD-6G . . .
Jefferson Coal & Coke Co., Canonsburg.

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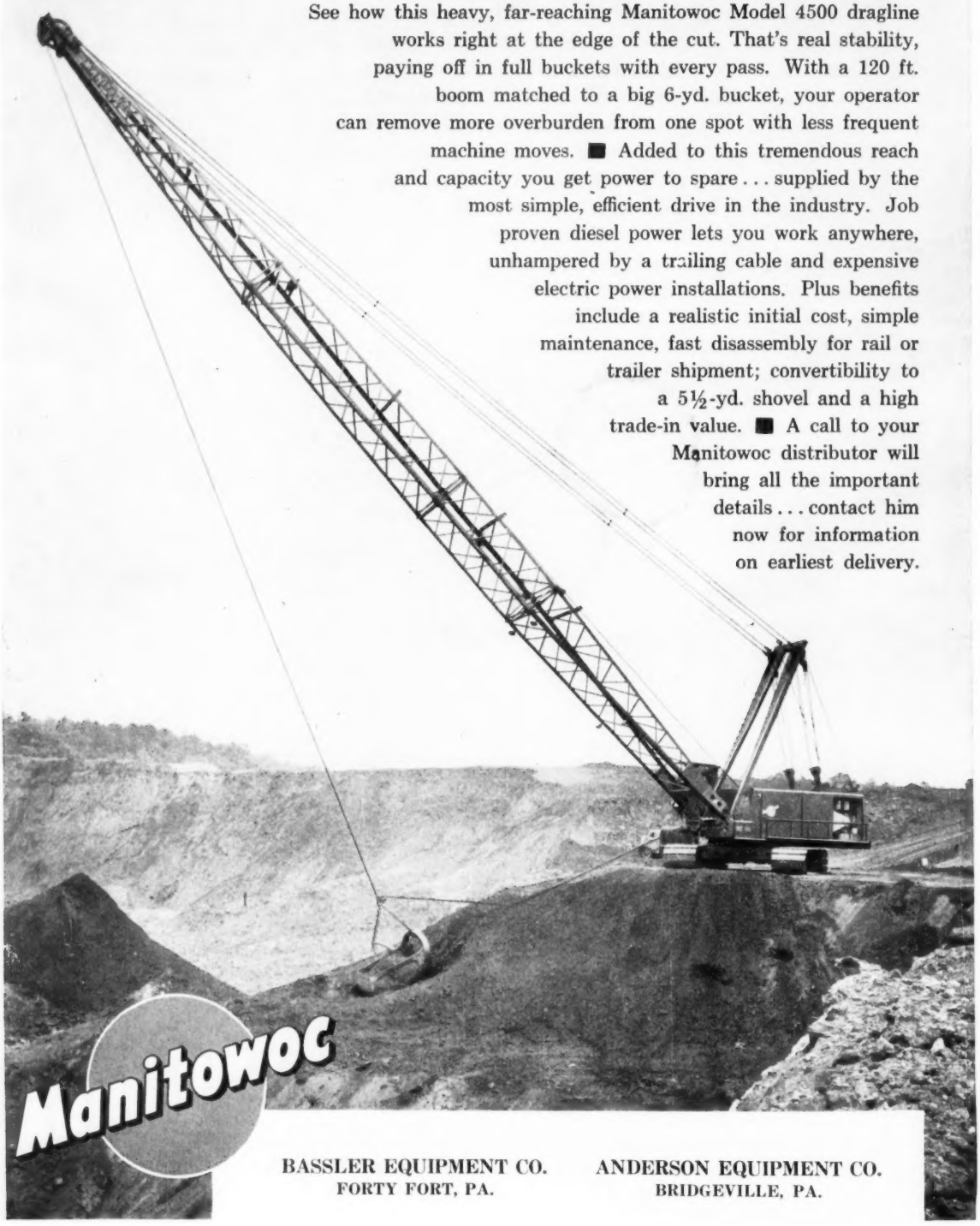
Nothing fits **STRIP MINING**

like this fast, mobile 6-yd. *diesel-powered*

MANITOWOC!



See how this heavy, far-reaching Manitowoc Model 4500 dragline works right at the edge of the cut. That's real stability, paying off in full buckets with every pass. With a 120 ft. boom matched to a big 6-yd. bucket, your operator can remove more overburden from one spot with less frequent machine moves. ■ Added to this tremendous reach and capacity you get power to spare . . . supplied by the most simple, efficient drive in the industry. Job proven diesel power lets you work anywhere, unhampered by a trailing cable and expensive electric power installations. Plus benefits include a realistic initial cost, simple maintenance, fast disassembly for rail or trailer shipment; convertibility to a 5½-yd. shovel and a high trade-in value. ■ A call to your Manitowoc distributor will bring all the important details . . . contact him now for information on earliest delivery.

Manitowoc

BASSLER EQUIPMENT CO.
FORTY FORT, PA.

ANDERSON EQUIPMENT CO.
BRIDGEVILLE, PA.

Do You Know?

● Railroads will maintain a position competitive with other forms of transportation through improved and growing use of automatic traffic control.

This conviction was expressed by J. W. Curran of New York Central System, Cleveland, Ohio, in tracing the history of New York Central's Centralized Traffic Control (CTC).

He told the American Institute of Electrical Engineers here that CTC was a success from the day it was first placed in service. It has grown in utility and scope with technological advances.

"It will continue to grow," he said, "and provide the means by which the railroads can maintain their competitive position through improved performance at less cost."

A single track with central traffic control, Mr. Curran said, could provide 75% of the traffic capacity that could be handled by two main tracks lacking this type of control.

In another report to the AIEE, G. W. Baughman of Union Switch & Signal Co., Swissvale, Pa., envisioned the practical use of crewless trains on some rapid transit systems in the future.

* * *

● A plastic resuscitator that is small and light enough to be packed in a beach bag has been developed.

Five minutes of instructions on just how to operate the device can save a drowning person's life, Dr. Allen S. Cross, designer, said.

The lifesaving gadget weighs only two ounces. It is made of sturdy plastic and boasts of long-shelf life. Dr. Cross of Washington, D. C., has labeled it the Venti-Breather.

It consists of a tube containing a valve, exhaust vent and attached mask. The valve within the tube passes the rescuer's exhaled breath into the victim's mouth, nose, throat and lungs. The vent allows the victim's exhaled breath to pass from the tube without returning to the rescuer's mouth.

This resuscitator avoids actual mouth-to-mouth contact. It will be useful at swimming pools, in hospital wards, as equipment for electric linemen, survival equipment for each branch of the armed services, and, in the event of atomic attacks, as a man-to-man lifesaver, Dr. Cross, medical consultant on emergency resuscitation for the U. S. Air Force, pointed out.

The device is not yet generally available on the market. But it is simple, sanitary and safe enough for anyone to operate and may someday become standard beach equipment for each family, Dr. Cross said.

HERE AND THERE IN THE COAL INDUSTRY

BUCYRUS-ERIE APPOINTS J. V. S. NORTON AS EASTERN REGION ASSISTANT SALES MANAGER

● J. V. S. Norton has been named assistant sales manager, Eastern Region, by Bucyrus-Erie Co., South Milwaukee, (Wis.) excavator and drill manufacturer. He had been assistant export sales manager for the last 21 months, working out of the home office.

In his new position, Norton is stationed in the company's New York office. He reports to F. Leslie Jones, Eastern Region sales manager.

J. V. S. Norton

An engineering graduate of tufts University, Norton has been associated with the mining industry for 32 years, including the last 13 in Bucyrus-Erie's export sales department.

He began his career as general foreman for the Anglo Chilean Consolidated Nitrate Corp., Tocopilla, Chile. Eight years later, United Electric Coal Co., Chicago, Ill., appointed Norton as purchasing agent and treasurer. In 1940 he became manager of the Tennessee Phosphate Div. of International Minerals and Chemical Co., Columbia, Tenn. Norton was a $1-a-year consultant with the Mining Division of the War Production Board, Washington, D. C. during World War II. He joined Bucyrus-Erie in 1945.

● Six mines of Bethlehem Mines Corporation have qualified for the Certificate of Achievement in the national campaign to prevent injuries from falls of roof, conducted by the Coal Mining Section of the National Safety Council for the year July 1, 1957 to June 30, 1958, the Council recently announced.

The mines receiving the award are Franklin No. 74, Johnstown, Pa.; No. 51 at Ellworth, Pa.; No. 58 at Marianna, Pa.; No. 21 at Jenkins, Ky.; No. 92 at Golden Ridge, W. Va.; and No. 101 at Century, W. Va.

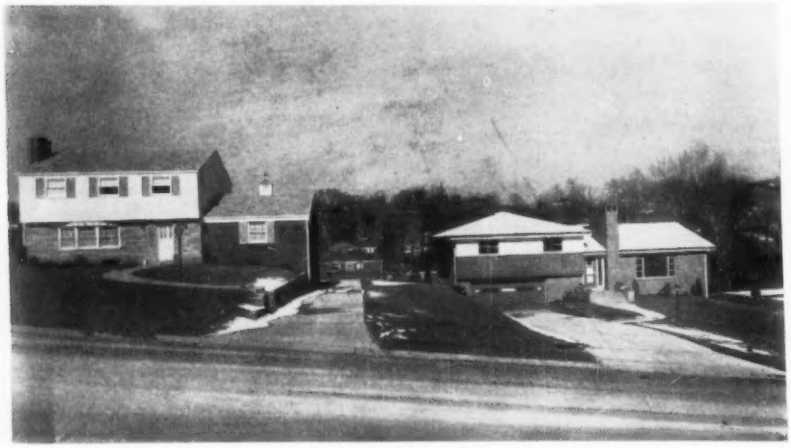
The Certificate of Achievement is awarded to any coal mine having either a perfect no-injury record, or having reduced the frequency of chargeable injuries from falls or roofs by 50 percent during the campaign year, compared with the frequency for previous years selected as a base period. In addition the mine must have conducted a minimum of six safety activities directed at the prevention of this type of accident.

In addition, 330 members of the supervisory force of Bethlehem Mines Corporation will be awarded Certificates of Commendation for completing the campaign year without a chargeable roof-fall injury to any man under their supervision. This award is given whether or not the mine where they work received the Certificate of Achievement.

Approximately 1200 coal mines throughout the United States were enrolled in the campaign, the object of which was an overall reduction of 50 per cent in the frequency of of roof-fall injuries. Although this national goal was not met, there were 509 fewer injuries from that source during the year, a 38 per cent reduction in the number previously reported.

Higher Cultural Environment for Future American Coal Miner

The intelligence quotient of the American coal miner has been on the rise since World War One. Military training was greatly responsible for that first, significant increase in intelligence. World War Two, followed closely by the Korean Policing Expedition further enhanced the I. Q. of the American soldier. Each time the American Coal Mining Industry received its share of enlightened and diciplined war veterans. This helped the coal industry considerably in developing mechanical mining. As mechanical mining outmoded hand mining, displacing many miners, the youthful, most intelligent miners were retained, thus raising the average I. Q. still higher. Each time that the I. Q. was raised in the industry, bringing with it more mechanization and higher wages, the human cultural status was raised in the coal mining community.



Future coal miners will demand better living facilities like these modern homes.

Modern up-to-date school with gymnasiums will be needed to lure the higher type personnel that will be required to operate automatic mining machinery.

The quest for culture has always been a part of man's existance and it is technology, not law nor public protest that is the big factor behind the shorter work day, the higher wages and the ensuing cultural gains of the American coal miner. Further technology in the form of automation is going to carry cultural gains of the American coal miners still further. Automation, with its additional wealth, will free the coal miner from his economic burdens and will allow him to turn his vision toward more enrichment of his mind and his spirit.

With complete automatic mining just over man's horizon, only the most intelligent, specially trained miner will be needed to operate the future automatic machines. That unprecedented, highly intelligent coal miners are going to demand a more satisfactory cultural environment in which to live than is at present available. But, man has always been a dissatisfied animal. He has now before him a vision of a future brighter and more promising than ever before. His persistence in seeking new ways to shape his environment and his desire will, no doubt, surpass his reach.

Late Goings-on in Coal Stripping of Northwestern Pennsylvania

● Today's dreams become tomorrows realities. Studying dreams of past mad dreamers we find that their dreams have not been mad enough. The past 50 years of history prove they were much to tame. The time has come for dreamers to have much madder dreams than the past mad dreamers to prove more accurately prophesy the future.

Knowledge brings imagination which often transcends boundaries of what is creating new technological objectives and bringing them to pass. The greater the knowledge the greater the value of new discoveries.

Knowledge accumulated through the ages, and modern technology, gives us a force offered to no earlier generation. It should be remembered, however, that technological developments have their roots in older sub-stratum of related work and many of our newer ideas were unavoidable. The question of accuracy in the application of the newer machines is a matter of experience. Only the good guesses and speculation which spring up in this manner have capacity for growth.

Up to now our determination to succeed has not been strong enough. Under concentrated effort, technological improvement is subject to our desires. If a solution to a problem is not possible one way, it is tried in all conceivable other ways until the right way is found. In this sense correct ways are wished into being when we wish hard enough. Our future guide should then be a better knowledge of what we deeply desire.

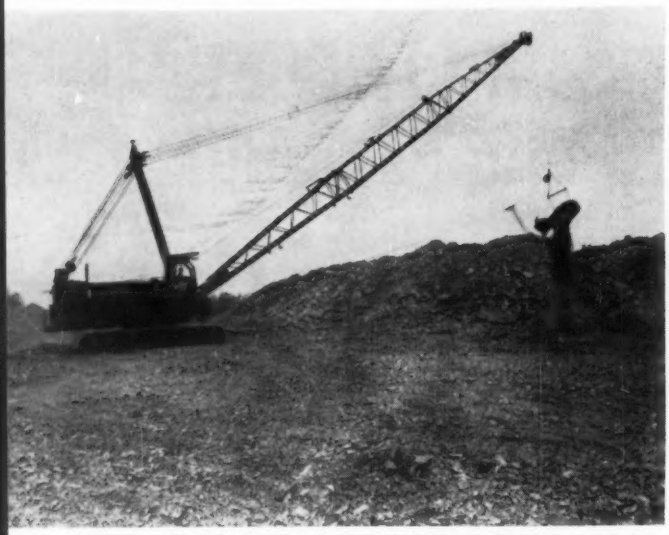
It can be said that coal strippers in Northwestern Pennsylvania are applying their latest knowledge to the application of the latest known equipment suited to their conditions.

Davey drill making blast hole at the Turner Brothers Coal Co.

4-Inch Jaeger pump at one of the operations of the Turner Coal Co.

Model K 608-L Link-Belt dragline at the David E. Barber Coal Company near Portersville, Pa. This dragline has 90 foot boom and 3 yard bucket. It is equipped with torch converter and has lighting system for night work. Also equipped with AB counter weights. It has 9 roller side frame crawler links, 20 feet 2 inches long. Tractor shoes are 40 inches.

SEE THE NEW



Manitowoc Model 4500 dragline at the Turner Brothers Coal Co.

Manitowoc Model 3900 dragline working at the DeMarch Coal Co. Boom is 80 feet with 2½ yard bucket.

Caterpillar D-9 tractor pulling fuel oil storage tank at the Turner Brothers Coal Co.

Model 626 Page dragline stripping at one of the operations of the Turner Brothers Coal Co.

Manitowoc Model 4500 dragline with 120 foot boom and 6 yard bucket working at the Willowbrook Coal Co. near New Castle, Pa.

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WATCH IT

blade bigger loads
hug steeper slopes
work at higher speeds

The NEW, BIG-JOB MOTOR GRADER built by CATERPILLAR

BIG NEW No. 14

150 HP — 29,280 lb.

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Here it is: the big motor grader with big performance, high productivity and low operating costs! It's the Cat No. 14 Series B Motor Grader with the right balance of power for the biggest, toughest jobs like rough grading, heavy ditching and spreading—and the speed and accuracy of control for maximum production in light spreading, blading, surface maintenance and fine finish grading.

BIG SIZE—No. 14 weighs 29,280 lb. with 22,270 lb. on big, tandem drive tires for maximum traction. Broad tread width and low center of gravity let the No. 14 hug slopes with sure-footed stability.

BIG FEATURES—ample throat clearance between moldboard and circle for greater loads; the exclusive Cat-built oil clutch for longer life; the new dry-type air cleaner for top efficiency during every service hour of operation; big 14.00-24 tubeless tires all around.

BIG WORKABILITY—150 HP turbocharged Cat Engine (18% torque rise) is the first and only turbocharged engine used in a grader. The durable constant mesh transmission delivers maximum power to the drive wheels.

BIG FRAME—the strongest motor grader frame ever built—triple box section—resists twist and shock of rough work and fast operation.

BIG PRODUCTION—the result of a balanced combination of size, weight, horsepower, and ease of control. See the big, new No. 14—test it—compare it—prove it; see your Caterpillar Dealer!

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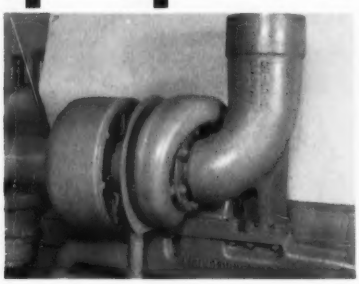
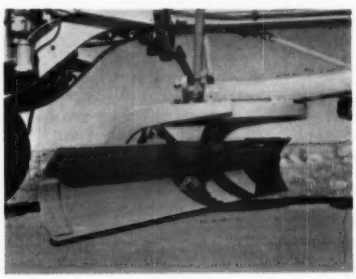
A multi-million dollar research and development program brings you new features that pay off on your job!



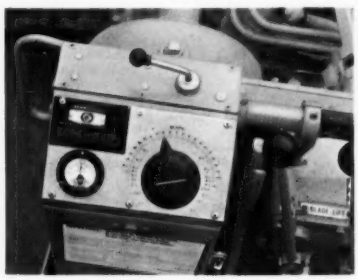
TURBOCHARGED ENGINE

New 6 cylinder, turbocharged Cat-built Diesel develops 150 HP, with unequaled lugging ability—an 18% torque rise! Only motor grader in its class with "own make" engine. A dry-type air cleaner removes 99.8% of dirt from air during every service hour.



HEAVY-DUTY CIRCLE & MOLDBOARD

New design provides big load-carrying capacity. Circle and 12′x 27″x ⅞″ moldboard are the strongest in the big motor grader class. A 14′ moldboard is optional. Exclusive, new, Cat mechanical blade controls provide precise, fast blade adjustment and positive hold.

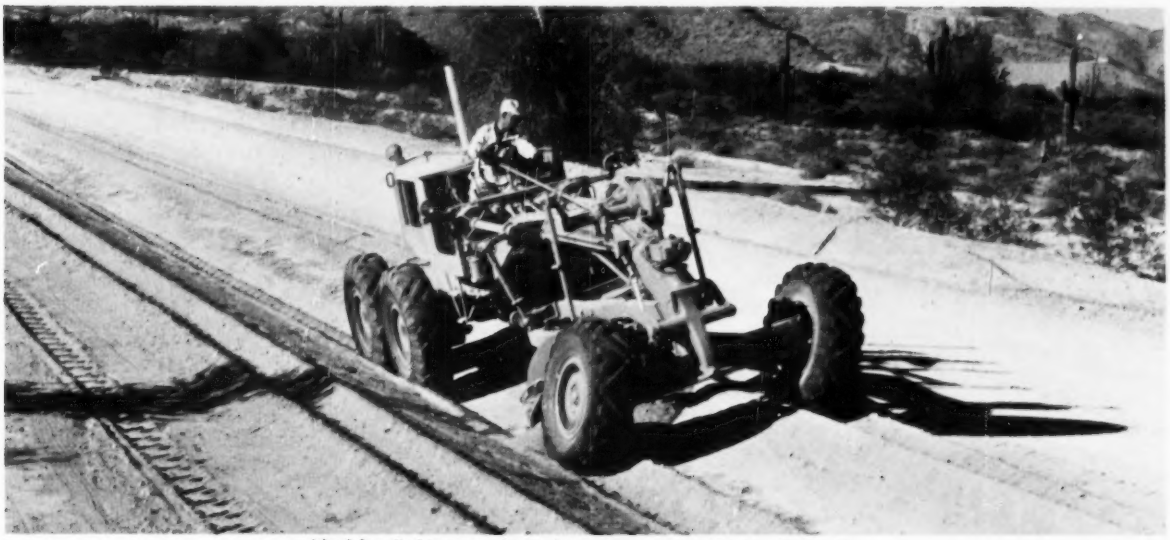


PRECO AUTOMATIC BLADE CONTROL

Optional on the No. 14. Another Caterpillar exclusive. Operator selects desired slope on dial. Now transistorized for freedom from maintenance and adjustment, the unit automatically maintains blade slope within ⅛″ in 10′. Cuts fine finishing time as much as 50%.

No. 14 the new standard of POWER and PRODUCTIVITY

No. 14 has speed, capacity and control for fast maintenance of high speed haul roads.



Ideal for ditching, rough grading, pioneering in the toughest jobs.

Broad, 8' width and low center of gravity enable the No. 14 to hug slopes, trim banks with sure-footed ease; unequaled stability increases operator confidence.

. . . See it at your CATERPILLAR Dealer

3 CAT MOTOR GRADERS

to fit your jobs

Caterpillar No. 112 Motor Grader

Whatever your job—from heavy-duty blading to road maintaining—we've the Cat Motor Grader with the right capacity and carefully matched attachments. No. 12 and No. 112 Motor Graders will continue as the standards of the industry in their classes. They combine unequaled availability with top performance at the lowest operating costs. The No. 14, reflecting this heritage, will set a new standard of performance in the big motor grader field.

We can also provide a wide range of matched equipment including new, all-transistor Preco Automatic Blade Control, DoMor Elevating Grader attachment and many others. Let us help select the equipment you need.

Caterpillar No. 12 Motor Grader

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• A new truck-mounted rotary drill for air or mud drilling in both rock and sedimentary formations is announced by Davey Compressor Co., Kent, Ohio.

Known as Model M-7WA, it is said to be suitable for gas, oil and water well drilling to depths exceeding 3500 ft. with 2 7/8 in. pipe and over 2500 ft. with 3 1/2 in pipe. In addition, it can be employed for all types of exploratory and core work in the mining and construction industries.

An important feature of the M-7WA is its open faced jack-knife mast. This facilitates use of extra wide break-out tongs and permits setting casings of up to 30 in. without moving the rig. It also results in a 96 in. working area.

Model M-7WA is offered with either power take-off drive from truck engine or separate power unit. Compressor is a Davey 600 c.f.m. model. Pump is heavy duty duplex type.

Hydraulically operated mast has a working capacity of 50,000 lbs. It can handle 20 or 30 ft. pipe sections. The latter are easily added or "pulled" by the dual drum hoisting assembly. Special drill collars add weight to insure rapid penetration rate.

Other features of the M-7WA are 3-speed rotary table, positioning of operator's station and controls next to rotary table and instant changeover from air to mud drilling through system of by-pass valves. Weight of the complete unit is 29,900 lbs. with auxiliary engine and 26,560 lbs. with power take-off drive.

For further details, write Rotary Drill Division, Davey Compressor Co., Kent, Ohio.

• New M-S-A Model 80 Slurry Rock Dust Distributor for machine mounting is the subject of a new bulletin just prepared for the mining industry by Mine Safety Appliances Company, Pittsburgh.

The new model — designed for mounting on any mining machine — is pictured in the bulletin.

Appropriate dimensional data lists tank capacity, discharge rate and operating time for a complete cycle (one batch) of rock dust mix. Details of a typical application and catalog numbers for unit parts are also included in the bulletin.

The new bulletin Number 1201-6 can be obtained from Mine Safety Appliances Company, 201 North Braddock Ave., Pittsburgh 8, Pa.

• An improved line of RUSTREM paints that can be used for the preservation of wood as well as metal surfaces is announced by Speco, Inc., Cleveland 9, Ohio.

With the addition of a special fungicide, DDBACC, RUSTREM is said to form a tough, attractive finish that protects wood surfaces against rotting, fungus growth, moisture, chemicals, mild acids and fumes. This is reputed to make it ideal for applications where metal and wood are fastened together or come in contact in any way (fence posts, railings, door latches, etc.).

Other uses include the coating of machinery, indoors or out; metal buildings, ventilators, furnace mountings, tanks, vats, fire escapes, and steelwork. Standard colors are black, super aluminum with clear base, aluminum with black base, oxide red, oxide green, chrome green, gray and white. Other colors are available upon special request.

RUSTREM with DDBACC protects and improves the appearance of all metal and wood surfaces.

RUSTREM requires no prime coating and can be brushed or sprayed on, after minimum surface preparation. It is available in 1-and 5-gallon cans and 55-gallon drums.

For further data, request form RAR-1, Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

Rear bucket of gigantic new earthmover loads itself without strain, while operator fingers pushbuttons on panel in front of him. So powerful is the super-earthmover that two buckets instead of one are used to dig and haul its 130-ton load. Buckets can load themselves separately, then are unloaded either together or separately as the operation requires. Photo was taken at proving grounds of R. G. LeTourneau, Inc., at Longview, Texas.

Questions and Answers on Expense Account Deductions

Next year the expense accounts of coal mining executives and employees will be in for closer examination by the Internal Revenue Service . . . Here's how to avoid trouble and to get maximum tax deductions.

By PAUL LOCKWOOD

● Tax experts are betting that the Internal Revenue Service will "lower the boom" on entertainment and travel expenses next year. The disputed line 6(a), which serves as a "red flag" to call the attention of the investigators to this amount, was recinded at the eleventh hour for 1957 returns. A recent Internal Revenue Ruling has been released that will apply to 1958 income tax returns.

Here are some questions and answers about things you will need to do to be in the clear on this item and to get the maximum deductions on your income tax return next year:

Does everyone have to report expenses on their income tax returns?

No. Executives and employees of coal mines who account to their employers for travel and entertainment expenses and are reimbursed do not need to report this on the tax return. All you need to do is to state that the amount advanced or reimbursed was not more than the amount spent.

As a general rule, the Internal Revenue Service takes the accounting of the company at face. They feel that if the company has approved the expense they know that it was business connected and know that it was paid. The recent rulings indicate that the employee who has accounted to his company will not be required to substantiate this expense on his tax return.

Employees and executives who do not account to their employers for travel and entertainment expenses will be required to report this information on their next year's income tax returns.

What business expenses can be deducted?

Any and all business expenses of travel and entertainment can be taken as an income tax deduction. However, you must be able to prove that:

1. You actually paid the travel and entertainment expense claimed.
2. That the expenses were not person, but for business purposes.

As you can see, these two requirements are the main reason the Internal Revenue Service is checking entertainment and travel expenses so closely. And, they are checking on these two things . . . actually paid and for business purposes.

What are the requirements for a business expense?

There is no hard and fast rule on this. Court cases have a bearing on the final decision, but circumstances alter cases. For instance, you can have a business expense for entertainment that does not produce business You take a customer to dinner and fail to close the deal. As long as this is a customary practice you can claim the expense as a deduction if it is considered "necessary."

You can be guided by two parts of the Internal Revenue Code that sets up the general rules for entertainment and travel expenses:

1. The expense must be ordinary — something done frequently in your business.
2. It must be a necessary expense — one that is reasonably expected to produce business.

Must I travel in the most economical way?

No. As long as your business trip is considered ordinary and necessary, you can travel in any way you prefer. For instance, you can take a deluxe flight rather than a tourist flight, Pullman rather than chair car, or any other first class accomodations you want.

You must, however, take the most direct route or charge off the expense of any side trips for pleasure. For instance, traveling from San Francisco to New York via New Orleans would not be deductible unless you had business in New Orleans. You would be permitted to deduct only the cost of the direct trip between San Francisco and New York.

Can I deduct my wife's expenses?

This is one point the Internal Revenue Agents check carefully. Unless you can prove beyond a shadow of a doubt that your wife's presence is essential for business purposes, you cannot deduct her expenses on a trip. Be sure your wife is doing something business connected on the trip if you plan to deduct her expenses.

You do get a break, however, on many travel and entertainment plans. For instance, traveling by air your wife can go for half of your first-class fare under certain conditions. Suppose that your trip costs $300 and her fare is $150. You can deduct the full $300 of your expense rather than half of the total ticket or $225. The same holds true of hotel rooms that have a different rate for two than for one . . . a $10 a day room for one person and $12 for two people. You could deduct the $10 as your business expense and the $2 would be a personal expense.

What if I entertain at home?

Any coal mine executive who entertains in his home for business purposes can deduct the cost of the entertainment. This would include all food and drink and any extra help needed to handle the entertainment.

This is a touch and go proposition in proving that the entertainment was a "necessary and ordinary" business expense. Just because everyone is a potential customer of your coal business does not entitle you to entertain everyone and claim the expense as a tax deduction.

How can I prove my travel and entertainment expenses?

Keep records!

Sounds simple, but most of us hate to bother with keeping records. At the end of the year, we try to reconstruct our expenses for the year. It is almost impossible. We are apt to overlook something and lose a tax deduction or include something we cannot prove and have trouble.

And, since the burden of proof is on you, it is most important that you keep detailed records of all entertainment and travel expenses to realize maximum tax deductions. Keep records.

What kind of records must I keep?

To avoid any trouble with your deduction, you will need to have rather complete records. You will need to have record of the date of the entertainment, the people involved, the time, and details of all expenses.

You can keep this on a day-to-day record book along with your appointments. You can file a separate form each day you travel or entertain. Or, you can keep this on individual cards or forms listing all the essential information to support your income tax deductions.

Can I use my cancelled checks for supporting evidence?

Yes. But, to be in the clear you will need some detail on the check or stub or both. For instance, checks written to "cash" for round amounts such as $50 need to be supported with more details. Check stubs that say briefly "travel" are not sufficient.

Another thought you will want to consider about your cancelled checks as record keeping devices. Obviously, you do not pay all expenses of entertainment and travel by check. Thus, if you use this system altogether you will be overlooking a lot of out-of-pocket expenses (tips, for instance) that can be income tax deductions if a record is kept of them.

Can I deduct automobile expenses?

Yes. An automobile that is used only for business purposes can be handled as any other piece of equipment in your coal mine. However, when there is a part-pleasure and part-business use of the automobile, this must be reported on your income tax.

The Internal Revenue Service has a worksheet (Form 2106) that helps calculate the cost of using your automobile for business. It includes information and schedules for figuring depreciation, determining the percentage of your gas, oil, service, repairs, parking, etc. that can be considered as a business expense.

You are not required to file Form 2106 with your income tax form, but you will find that it is most helpful in calculating your taxes. And, when it is submitted it makes it easy for agent to check it in the office rather than making a call on you personally to clarify any points that are not clear.

Following these suggestions will help make your income tax reporting easier next year . . . you will have the facts to figure your tax . . . you will have the proof if necessary . . and you will save trouble and time in reporting your tax. Also, you will save income tax dollars by taking all that you are entitled to deduct.

● Recognizing the demands of today's faster, higher horsepowered earthmoving machines and tougher job conditions, Caterpillar Tractor Co. has developed "Hi-Electro" hardened cutting edges.

During the life of a bulldozer or scraper, cutting edges must be replaced many times. Whenever replacement occurs, either from wear or breakage, the owner must stand not only the cost of the parts, but the machine down-time and labor expenses as well.

Obstacles such as rocks and boulders give scraper cutting edges a terrific pounding during ram-pack, push loading and high speed bowl breaking. Bulldozer edges encounter equally severe conditions. To meet this challenge, Caterpillar metallurgists and research engineers have produced an edge of unsurpassed performance.

The ideal cutting edge has three prime qualities. It must be extremely hard to resist wear, strong enough to sustain shock without bending or breaking and it must be thin enough to penetrate materials easily. Cutting edge steel as it comes from the mill does not have these qualities. Only proper heat treatment will create them.

"Hi-Electro" hardening was selected as the best way of obtaining wearability and strength. The process offers the exacting control needed to produce a superhard case and retain a tough and shock resistant core. It also allows the edge's projected area to be kept thin enough for good penetration.

Once the newly developed edges had satisfied metallurgical standards, they were placed on trial under actual job conditions. During tests conducted by research engineers at Caterpillar's Proving Grounds and on West Coast Contractors' jobs, the edges were subjected to every type of application. Later tests were also made by dealer parts representatives in cooperation with other contractors.

At a recent Peoria Proving Grounds test production edges were given load-drop trials. A DW21 — No. 470 Tractor-Scraper unit was loaded to capacity, weighed and driven onto concrete pavement. The scraper was equipped with a new "Hi-Electro" hardened 7/8-inch stinger, selected at random from a production lot. A block formed from four 3/4-inch thick steel plates was placed underneath. The weight of the scraper and its load was allowed to crash down to the block from a fully raised position. This process was repeated several times with successive edges from the same lot. Despite the impact sustained directly on the stingers, none were damaged.

Now completely tested and proven, "Hi-Electro" hardened cutting edges are available from Caterpillar Dealers.

Splicing High Voltage Cables in Mine Service

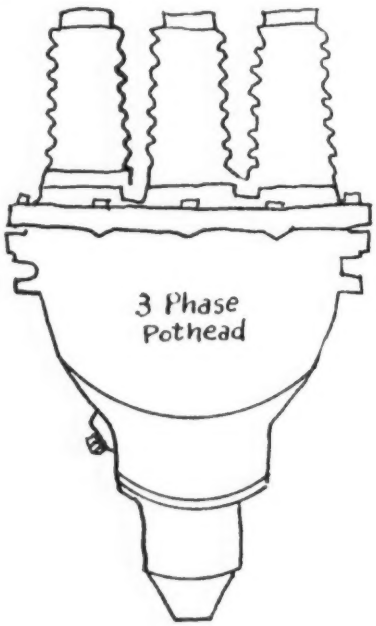
(Concluded from February)

Grounding The Shielding

It is necessary to ground permanently, the shielding of all shielded-type cables at one or preferably more points. Specification IPCEA covers this in detail. In lead covered cables, the shield automatically is grounded by contact with the lead sheath which usually grounded the shielded-type cables and joints, it is necessary to ground by means of a ground strap or other means to an external ground.

The Ground Strap

The copper ground strap is soldered to the shielding of the cable and brought out for external connection through the protective wrapping over the joint without in any way impairing the effectiveness of the covering and its protective ability against entrance of moisture.



Installing The Pothead

This is the means of terminating the cable at the top of bore holes, in electrical substations, and on power poles. The technique is not too envolved and can be performed by the average electrical-mechanic with good results, providing a few fundamental rules are followed.

1. Train cable into exact position and place pothead temporarily in final position in front of cable. Measure off the distance from the end of the lead sheath that has been cut back to expose the insulation and conductors to the top petti-coat of the insulator. Cut the top off the cable at the upper mark and mark the lead sheath 1" from the wiping nipple on the pothead. *(Figure 6).*

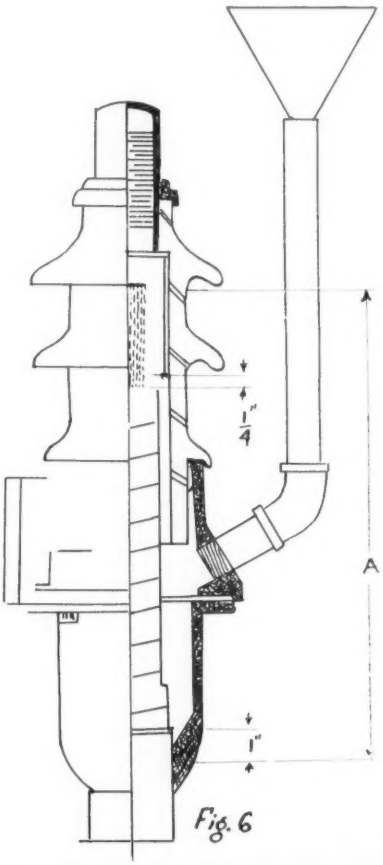


Fig. 6

Slip wiping nipple over the cable, remove lead sheath from cable and bell out the end. Remove insulation ¼" longer than the depth of hole in the stem. Tin the exposed conductor strands and solder thoroughly to stem

For lead-covered cables rated at 8000 volts and higher, grounded neutral, apply stress-relief cone as in *Figure 5* using varnished cambric tape and copper-mesh tape spot-soldered and soldered to sheath.

2. With insulator tightened in cap, slip the assembly over cable and bolt wiping nipple and gasket tightly in place. Adjust stem in insulation for proper seating. Slip gasket over stem and screw hoodnut in place. Be sure all bolted and gasketed joints are tight. Prepare lead-sheath and make a plumbers wiped joint.

3. Bolt pothead in position. Insert the standpipe and loosen so air can escape as compound is poured. Fill completely as the instructions indicate with the shipment. Tighten hoodnut, apply heat to the standpipe so that the compound always stays fluid and keep it filled and flowing until pothead is filled. Remove the standpipe and tighten the plug into place.

4. For shielded-type, rubber-insulated, neoprene jacketed cable apply stress-relief cone and ground the shielding to the pothead between the entrance and cap. Ground the entrance with its own grounding conductor.

The Stop Joint

With the advance of insulation techniques came the oil and gas filled conductor. Both have their specific applications. The gas filled cable is brought to public attention quite frequently where cylinders of nitrogen are seen lashed to a country telephone pole supporting a vital, long-distance cable. The emergency gas injection is keeping out the possibility of entrained moisture until repairs can be made to the lead sheath at some point located by a series of clever devices.

A stop joint is needed at certain predetermined intervals to seal off the designated sections from other sections. Each section is then inde-

pendent of the other and is tied to its own low pressure alarm system. The stop joint, to be safe and effective, must of necessity be comparatively large and made of expensive materials to withstand gas pressures of the full rated differential on either side of the barrier and have high delectric strength, both capable of withstanding, without loss, intermittent heating due to load cycles.

Semistop joints have the same function but not as a full stop. Being rarely used we'll confine ourselves to the full-stop type recommended for solid insulation. With the improved cables on the market today such as the Anaconda F-3 and others permissible internal pressure can be increased to 22.5 psi instead of 15 for lead-copper sheath without age hardening and with negligible resultant creep.

The case of the stop-joint is spun-copper and the barrier of high grade insulating material capable of withstanding 24 kv for many years of exposure. Tests have shown that short cables wiped in place on either end and sealed one side of the barrier filled with oil and placed under pressure of 150 psi the other side open to atmosphere, the joint suffers no loss of pressure or oil for more than two years.

The Cost Factor In Mine Electrical Maintenance

The word maintenance is more often spoken about every production operation that is taken for granted. There is, however, a broad spread in the variance with which it is interpreted and practiced. Yet few cost factors are more important—few affect efficiency as drastically. With the speedy expansion of mechanization throughout the industry, proper care and installation of equipment and plant facilities is fast becoming more vital to effective mine management.

With the increased tempo of machine installations there has not always been a studied, concerted effort to maintain that equipment along the best, approved lines. All too often the program is still largely one of the mule tram days when life was simple, if not more rugged. Of course, the men have acquired automobiles and motorboats and have learned to maintain with a minimum of cost to themselves, and their homes are equipped with the latest gadgetry the market affords. All this helps to train the man for the equipment he handles underground. There is but one exception — the machinery he installs and works with is NOT his own. Investment in high priced, high capacity equipment is justified almost entirely by the quality of maintenance. The variation in the interpretation of the word maintenance is defined by the type work performed the bare essentials or repairs and replacement — or the systematic inspection, lubrication and replacement of worn or broken parts and a periodic general overhaul and reconditioning with perhaps modernization as well.

In relatively few cases maintenance is considered from the standpoint of regular production and uniform costs of such maintenance and operation.

Quality of workmanship and conditions under which machines and power installations must work is to be taken into consideration. No questions arises in the minds of mine management about the importance of maintenance in a highly mechanized mine. Yet two questions do arise: Has the quality workmanship kept in step with the progress in mechanization? What type of yard stick is applied to the workmanship, if any?

Having come up the long years through adversity most managements know the wisdom of installing equipment with an eye to expansion in the future. This overcapacity is a money in the bank for the day its needed and its ready to go to work with no dislocation of production. Keeping that excess capacity in readiness is developing economic security for the future. Yet if it is used for other than emergency purposes it may fail of its goal. Its poor planning to use the extra capacity to develop a crash program to smooth out dips in the production chart caused by unproductive time.

The old familiar bogies of mine operation are down-time caused by equipment failure, plus absenteeism, accidents, waste of materials or just plain shiftlessness on the part of many. These all affect maintenance costs.

A word now about the quality of the materials purchased, the workmanship, and the quality of technical knowledge available to establish a low cost per ton operation. The field of maintenance spreads well beyond mechanism, materials and skills. Highly qualified technicians using quality material still cannot guarantee regular production. And the cost of maintenance often fluctuates more widely than other items of cost.

Mine management being assumed to be progressive and competent coal is mined by methods which are adapted to the conditions peculiar to that installation. The latter is fixed. It will rarely change for the life of the installation. The system of mining is well planned; and the operating force is expected to meet a minimum standard of production and cost. Why then the heavy dips in the production chart for the week or month.

The Investment In "Parts"

The fear of being caught short of vital supplies in the event of a breakdown has caused many an otherwise sensible manager to go overboard in the manner and amount of funds invested in spare parts. The well planned stock list is truly the work of a perfectionist with many years of study given to the project. Once having determined the quantity of a given set of items for replacement and expansion purposes the next most important step is record keeping. Next comes proper storage and finally the most efficient manner of charging "out" the items withdrawn from the storeroom shelves.

From the stock records can be learned the identity, source, price, quality, quantity, rate of turnover, where, by whom and for what purpose materials and spare parts were ordered and used.

An "Early Warning" System!

An excessive amount of certain materials moving out or an unusual turnover of certain parts immediately suggests four lines of investigation. In the normal sequence of events these are: Quality of material; quality of workmanship; competency of operating force; and conditions which cause damage to materials or parts.

The method of obtaining information from stock records requires no junior F.B.I. to ferret out the facts. Poor quality material, inferior workmanship and general incompetency are usually readily apparent. Management can effectively control all three conditions if it wills.

Quality Merchandise

Definite specifications should be set up as a guide for the purchasing agent. Lacking them the agent is free to "shop around" too much to place the business on a penny saving basis or to favor some crony that needs the commission. This is not to say that shopping around is condemned. Rather it is a commendable practice for the procurement department to build up a file of information so that changes can be made as new equipment is available. Bargain hunting is a commendable trait for the agent if he knows what is desired and is rigid about quality. When materials or parts do not meet the specifications there are but one of two reasons — either the manufacturer is at fault or the agent has played a penny-wise pound-foolish game in the effort to justify his salary.

A case in point. — The original purchase of trolley wire splicers when electric traction was installed was the "competition grade" using two serrated steel dogs driven in over the wire to jam it against withdrawing under stress. The slightly acid mine air rusted these "dogs" readily and as a result the splice could not be salvaged and all to frequently the wire slipped from place. Years of lamentation by the electrician failed to affect a change in the buying until caught short on an occasion a dozen first class splices were borrowed from a competing mine.

These splices with the bronze set screws set at an angle against the strain proved the electrical departments point and a belated change was made. The moment of truth had arrived for the procurement department that had always argued that two dog-type splices could be purchased for the price of the better professional model, commonly used by street railway systems. If it is the policy of management to place a low price before quality there can be no serious blame laid on the maintenance staff for poor performance.

Quality Workmanship

With the ever increasing advances in mechanical-electrical machinery making their debut there comes a need for the selection and training, plus placement of the qualified technicians required to install and maintain the complex, modern instrumentation, control and protective devices used in the high priced, new equipment. All requiring much more delicate adjustments and precise trouble analysis by thoroughly competent men. Certainly not those chosen by nepotism or other favor. It cannot be too strongly emphasized, however, that no amount of technical skill, use of prime parts and loyalty to duty by the maintenance staff can overcome gross, well nigh willful abuse offered mine equipment by an element present in all mines that argue that equipment is expendable and as such can be viciously abused.

All operations worthy of the name of recognized fair sized producers should assign the function of specification and procedure writing to the engineering department since where there are no specifications for the purchase of materials, no standards for their use, or the operation of equipment or method of job placement for men according to their proven skills there will always be too much work for the maintenance staff. Competency of the operating forces is a most important factor in reducing costs along the lines described above. It is management's responsibility to see that corrective action is taken toward rectifying such costly conditions.

Admitted it is that problems imposed by adverse mining conditions can impair production figures, the quality of the maintenance and the attitude of the operating staff. Usually, though, the problems are not insoluble and some definite improvement in conditions can be made if thought and effort is properly directed toward that end. The deplorable attitude is defeatism that permits such bad conditions to exist to the ruination of the general morale.

A Summary of Bad Conditions

The cause for much of the high cost of operations is manifold yet the salient points are quite obvious to the experienced observor. Sometimes management cannot see the forest for the trees and under such conditions an unbiased outside person is needed to point up these causes:

1. Poor performance of the power distribution and communication systems. Like Topsy in the famous novel the mine just grows bigger year by year and the old order fails to change with it. This means heated conductors caused by overloads, poor voltage regulation and power factor with resulting big meter bills, unbalanced loads, damaged motor equipment and much downtime because of circuit breaker or fuse outages.

2. With the inadequate power equipment already over-loaded as

it is the condition is usually worsened sadly after down-time by crowding extremely heavy production on it in a vain effort to make up for the down-time. It's a vicious circle! The answer is a periodic load survey coupled with long range planning for expansion of the system. This is not to say that a planned, uniform production schedule cannot live well with the existing power system.

3. Crash type emergency repairs are the most expensive means of maintaining equipment since but little of the trouble cannot be anticipated in advance by conscientious, periodic inspection and lubrication, plus adjustments and cleaning.

4. Inadequately maintained haulage ways with curves improperly made through too frequent use of angles at the joints to save on "Jim Crow" effort to develop smooth, even radii. Failure to clean sludge from drainage ditches with subsequent deterioration of the track bed ballast. Lack of periodic surveys of track joints with the galvanometer to locate defective or missing joint bonds.

5. Unguarded trolley conductors at crossings, shaft stations and yard areas. Poorly guarded machinery, transformers, rectifier stations and switch layouts. Failure to maintain a low resistance ground wire on all electrically powered equipment. Inadequate lighting.

6. Inadequate ventilation causing damage to equipment through dust, moisture, and acid laden air.

7. Lack of well planned dispatching systems for the haulage or failure to properly maintain once excellent systems. Hoisting signal service not kept free of insipient grounds due to moisture infiltration or general deterioration of the insulation values.

Top flight installation and maintenance is strictly a matter of economics. High-quality performance guarantees economic security for the owners!

● To acquaint mine supervisors, safety engineers, purchasing agents and others who specify mining equipment with the latest improvements to the Edicon R-4 Electric Cap Lamp, a new four-page bulletin on the product has just been published by Mine Safety Appliances Company, Pittsburgh.

Reviewed in the new bulletin are cap lamp components that lend themselves to improved safety, better illumination and more satisfactory battery maintenance.

Discussed in detail are functional advantages of the two-filament Edison R-4 bulb. The bulb's focusing arrangement — providing effective illumination when either filament is used — is described and illustrated.

Included in the bulletin are a discussion and illustrations on the adaptability of the Edison R-4 Electric Cap Lamp to either the automatic low-voltage charging system or the series charging method.

Individual battery elements are pictured and the M-S-A battery service illustrated and explained.

The new M-S-A Bulletin Number 0201-5 is available from Mine Safety Appliances Company, 201 North Braddock Avenue, Pittsburgh 8, Pa.

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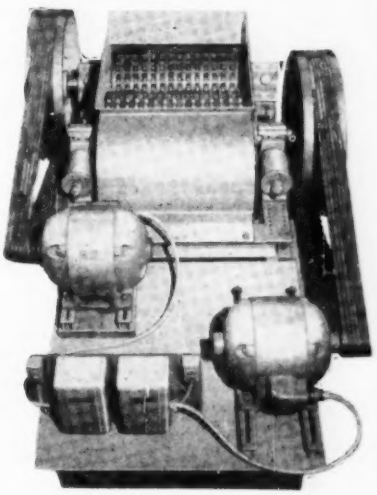

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● The Jeffrey Manufacturing Company, Columbus, Ohio announces changes of address for the following District Offices:

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The Birmingham and Salt Lake City offices serve both the Industrial and Mining Divisions of the Jeffrey organization.

● What is the proper way of obtaining positive initial valve seating when reconditioning a diesel engine? What is the maximum clearance allowance between a remachined top groove and a new "wide" top piston ring? What is the maximum diameter wear limit for a cylinder liner before it must be replaced?

These questions and others are answered in a new eight-page booklet, "Money Saving Hints on Engine Reconditioning," just released by Caterpillar Tractor Co.

Tips on various operations which are necessary in reconditioning engines are also offered in the book.

Copies may be obtained through Caterpillar dealers or by writing to the Advertising Division, Caterpillar Tractor Co., Peoria, Ill., and asking for booklet DE864.

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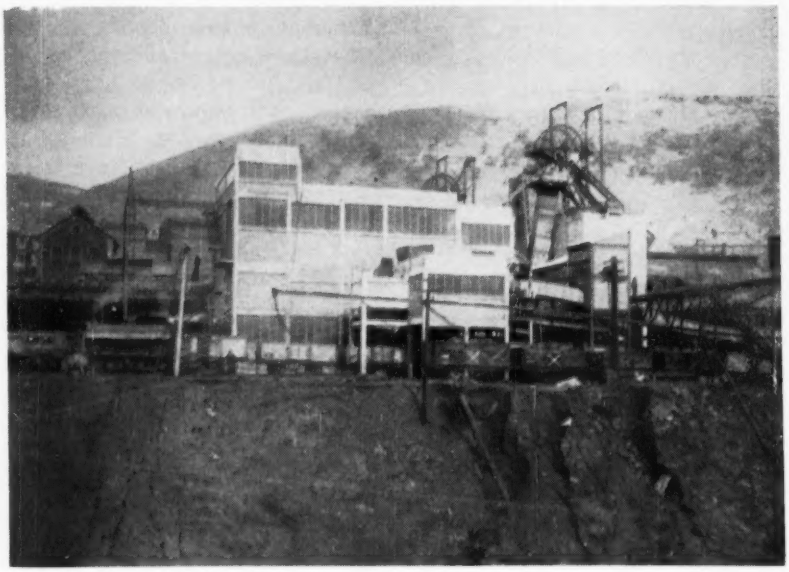

Installation has just been completed on a "DANIELS" American coal washer, the first to be accepted by Great Britain's National Coal Board, Authority for the Nationalized Coal Industry in Great Britain. Daniels Dense Media System Coal Washers of 200 TPH capacity were installed at The Elliot Colliery, near Cardiff, in Wales by Unifloc Limited, Swansea, G. B. A second plant has since been accepted by the same Authority.

Unifloc's Managing Director, by the way, is Mr. John L. Lewis of Swansea.

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1—GMC 471 Diesel with 60 KW, 250 volt DC Generator.
1—GMC-671 Diesel with 75 KW, 250 volt DC Generator.
1—GMC-671 Diesel with 110KW, 250 volt DC Generator.
1—Cummins 125 KW, Diesel with 250 volt DC Generator.
1—Allis Chalmers Natural Gas Engine with 100 KW Generator, 275 volt DC.
1—700 H.P. Shaft Hoist, complete.
Complete steam plant will sell all or any part.
Boilers, like new, 1100 H.P. and 500 H.P. Also transformers, turbines, etc.

MISCELLANEOUS

5—Complete Tipples, 3 to 5 Track. Wood and Steel.
20—Jeffrey Molveyors on rubber tires.
1—¾ Yard Shovel and Back-Hoe.
1—¾ Yard Crane on Cats.
Battery Supply Tractors, rubber tired.
1—Cantrell Air Compressor on rubber tires.
10—Air Compressors, 1 H.P. to 40 H.P.
2—Joy self propelled rubber tired compressors, 240 cu. ft.
2—Acme self propelled rubber tired compressors, 130 cu. ft.
40 Mine Pumps, all types.
1—Differential 40 Passenger Man Trip Car.
6—MSA Rock Dusters.
2—Phillips, Carriers, 44" and 48" Ga.
1—Barber Greene self propelled Bucket Elevator.
Pipe, Plastic, Steel, Transit, all sizes 1" to 6".
300 Mine Cars, drop bottom, 42" Ga.
30 Mine Cars, drop bottom, 44" Ga.
100 Mine Cars, 18" high, end dump, 44" Ga.
300 Mine Cars, end dump and drop bottom, 20" high, 48" Ga.
1—10 ton Mine Car Scale with Recorder.
15—Brown Fayro HKL and HG Car Spotters.
1—12 ton Differential Slate Larry.
Incline Hoists, 25 to 50 H.P.
1—Jeffrey 5' Aerodyne Fan, like new.
1—Jeffrey 6' Aerodyne Fan.
1—Jeffrey 8' Aerodyne Fan.
2—Storage Tanks, 4,000 Gallons.
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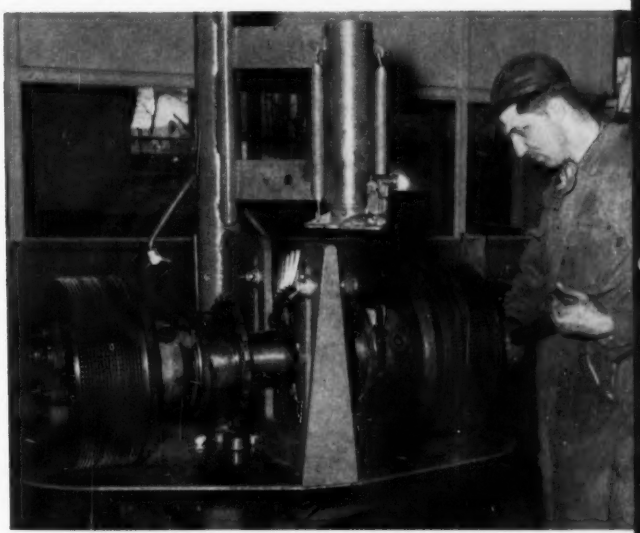

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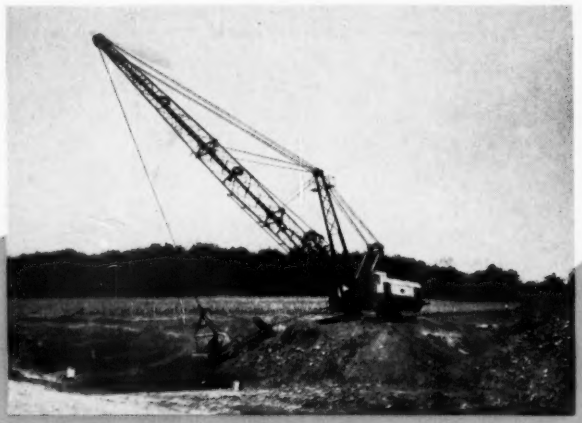

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